Transp to Eng
W7160

INDEX TO VOLUME IX.

ABATEMENT of Smoke, (Beilby), 182
Accident, The, at Leven Viaduct, 260
Account-keeping for Foundries, (Falconer), 575
Accumulator, The Edison-Jungner, (Schoop), 368
Accurate Cutting and Testing of Screws, (Orr), 272
Action of Carbon, Carbon-Monoxide and Carbonic Acid on Iron and its Oxides, (Baur and Glaessner), 69
Acts, *see* Electric Lighting Acts
Adjustable Cutters, Boring Bar with, J. D., 284
Adjusting Brasses, A. B., 382
Administration, Shop and Manufactory, Gauges and Standards as affecting, (Marshall), 373
Advent of the de Glehn Compound Locomotive in Great Britain, 225
Africa, South, *see* Natal
Air, (*see* Atmospheric and Compressed Air), Vitiation, The Relation of Sulphur in Lighting Gas to, (Haldane), 470
Alleged Cementation of Iron by Silicon, (Stead), 70
Allen, H., Blast Furnace By-Products and Their Possible Recovery, 1
Allotropic Changes of Iron and its Alloys, (Boudouard), 69
Alloys of Iron, Nickel, and Manganese, (Hadfield), 166
and Tungsten, (Hadfield), 458
The Properties of, Influence of Varying Casting Temperatures on, (Longmuir), 359
Steam Metal, Conditions Governing the Production of, Longmuir, 412, 501
the Study of, An Introduction to, (Howe), 358
suitable for Bearing Purposes, (Clamer), 263
used for Steel-making, (Ohly), 554
of Vanadium, *see* Vanadium.
Alternate Currents, Electrolysis by, (Le Blanc & Schick), 369
Alternating-Current Voltmeters, Electrostatic, Capacities as Multipliers for, (Marchant & Worrall), 567
Alumino-thermite with Iron and Steel, New Applications of, (Goldschmidt), 358
Amendment of the Electric Lighting Acts, 50
America(n), U.S., *see* Boston, La Grange, New York, *etc.*
Arc Lamps for Street Lighting, (Halberg), 370
Automatic Signalling in, and in Great Britain, (Cudworth), 176
Classification of Locomotive Types in, 222
Deposits of Magnetic Ore in, (Reis), 455
Experiments in Alloys for Bearing Purposes, (Clamer), 263
Foundry Management in, (Kirk), 170
Gas Engine Tests in, (Robertson), 266
Graphical Daily Balance in Manufacture in, (Gantt), 280
Locomotives from, in England, 320
Melting Equipment of Atlas Engine Works, Indiana, 170
New Cupola Slag Conveyor in, (West), 264
New Form of Extensometer in, (Summers), 259
New Works of the Lackawana Steel Co., 168
Oil Treatment for Leaks in Concrete in, 552
Principal Iron-making Centres of, as Competitors with Great Britain, 554
Railway and Lighting Storage Battery at Milwaukee, 369
Reinforced Concrete Floor, in, (Scofield), 352
Spier Falls Dam, Hudson River, (Howe), 259
Steam Engines made in, 269
Steam Turbine in, from an Operating Standpoint, (Waldron), 361
Tests of Piston and Slide Valves in, 269
Anodes, Scrap, Recovery of Nickel from, (Beckwith), 264
Appliance for Rivet-cutting, "Aspirant," 94
Applications of Electricity in Engineering and Shipbuilding Works, (Williamson), 180
Industrial, of Electrical Power, (de Marchena), 368
New, of Alumino-thermite with Iron and Steel, (Goldschmidt), 358
Arc, High-Tension Electrical Discharge, J.W.B., 94
Lamp (s), Electric, The Meridian, 543
—— for Street Lighting, U.S.A., (Halberg), 370
Slide-rest, Circle or, Design for, (Card), 367
Arches, Skew, Stresses on, (Kernot), 162, (Paige), 354
—— The Theory of, (Miller), 353
Arctic Lapland, Iron Ore of, (Osborn), 554
Armature of a Dynamo, Measuring the Moment of Inertia of the, (Fabry), 279
Arnold-Bragstad-Lacour Polycylic Power-Transmission System, Germany, (Bragstad), 179
Assimilation of Railway Practice in respect of Loads on Bridges up to 200ft. Span, (Ross), 164
Atlantic Type Locomotives on the East Coast Railways, 126
— — 4-4-2 in France and Germany, 507
Atlas Engine Works, Indiana, U.S.A., Melting Equipment of, 170
Atmospheric Air, An Electrical Method of Preparing Nitrogen Compounds from, (Rasch), 178
—— Discharges, Electric Plants and, (Benischke), 74
Automatic Signalling, British and American methods, (Cudworth), 176
—— Switch for Organ Motor Controllers on 500-volt circuits, R. C. H., 282
Automobile (s), *see* Electric *do.*
Axial and Modern Radial Turbines, Comparison between, (Pfarr), 461
Axles, Hollow Pressed, (M.R.), 262

BACILLUS COLI in Water, Practical Value of Presumptive Tests for, (Whipple), 575
Bacteriological Investigation of the Severn in the Shrewsbury District, (Boyce and others), 183
Balance, Graphical Daily, in Manufacture, U.S.A., (Gantt), 280
Balls for Valves, Turning, J.H.H., 186
Battery(ies), *see* Edison Storage, Electric, Primary, *and* Storage *do.*
and Coils for Gas-Engine Ignition, (Frost), 181
Beaches, Foreshore Protection and Travel of, (Douglass), 209
Bearing Purposes, A Study of Alloys suitable for, (Clamer), 263
Bearing(s), Lining up, of Electric Generating Plant, Q., R.L.H., 383
of Naval Engines, 563
Bending Block, A, J.A.M., 188
Moment, *see* Maximum Bending Moment
Benjamin, Prof. C. H., The Bursting of Emery Wheels, 243
Biological and Chemical Laboratories of New York Water Department, (Whipple), 80
Bitumen, The Testing of, (Dow), 352
Blast Furnace(s), By-Products and their Possible Recovery, H. Allen, 1
Equalisation of Hot Blast Temperature for, (Harrison), 169
Gas-Engines, (Kirchhoff), 556
Metal, Production of Open-hearth Steel from, (Talbot), 166
Processes, Potassium Cyanide and Nitrogen Reactions with, (Braune), 68
Slag, Portland Cement and, (Passow), 354
Temperature Reactions in, (Allen), 266
Block (*see* Swage Block), A Bending, J. A. M., 188
A Stretching, J. H., 477
Blondel Oscilograph, The, (Hale), 66
Blow-pipes in Workshops, uses of, Q. E. F., 474
Blowing Engines, Steam-driven and Gas-driven, (Westgarth), 268
Blue-Print Frame, A Rapid, (Randol), 472
Boiler(s), *see* Coned-Ring, Steam, Water-tube, *see also* Steamship Economy.
Explosions, How to Prevent, (Gifford), 172
and Furnace Efficiencies, Some Tests of, (Bement), 462
Expansion, Trouble with, J. H. T., 475
Scotch or Cylindrical Multitubular, (Nicholl), 462
Boring Bar with Adjustable Cutters, J. D., 284
Lathe, Temporary Running of a 4ft., R. V. C. Brook, 379
Machine, a Horizontal, Cutting Worm-wheels on, J. D., 283
Taper, F. B., 478
Wood Bowls, M. D., 190
Boston Elevated Railway, U.S.A., Failure of a Sea Wall connected with, and its Reconstruction, 551
— — — Foundations for the Elevated Structure of, (Kimball), 453
Bowls, Wood, Boring, M. D., 190

Transp to Eng
W7160

INDEX TO VOLUME IX.

ABATEMENT of Smoke, (Beilby), 182
Accident, The, at Leven Viaduct, 260
Account-keeping for Foundries, (Falconer), 575
Accumulator, The Edison-Jungner, (Schoop), 368
Accurate Cutting and Testing of Screws, (Orr), 272
Action of Carbon, Carbon-Monoxide and Carbonic Acid on Iron and its Oxides, (Baur and Glaessner), 69
Acts, *see* Electric Lighting Acts
Adjustable Cutters, Boring Bar with, J. D., 284
Adjusting Brasses, A. B., 382
Administration, Shop and Manufactory, Gauges and Standards as affecting, (Marshall), 373
Advent of the de Glehn Compound Locomotive in Great Britain, 225
Africa, South, *see* Natal
Air, (*see* Atmospheric and Compressed Air), Vitiation, The Relation of Sulphur in Lighting Gas to, (Haldane), 470
Alleged Cementation of Iron by Silicon, (Stead), 70
Allen, H., Blast Furnace By-Products and Their Possible Recovery, 1
Allotropic Changes of Iron and its Alloys, (Boudouard), 69
Alloys of Iron, Nickel, and Manganese, (Hadfield), 166
and Tungsten, (Hadfield), 458
The Properties of, Influence of Varying Casting Temperatures on, (Longmuir), 359
Steam Metal, Conditions Governing the Production of, Longmuir, 412, 501
the Study of, An Introduction to, (Howe), 358
suitable for Bearing Purposes, (Clamer), 263
used for Steel-making, (Ohly), 554
of Vanadium, *see* Vanadium.
Alternate Currents, Electrolysis by, (Le Blanc & Schick), 369
Alternating-Current Voltmeters, Electrostatic, Capacities as Multipliers for, (Marchant & Worrall), 567
Alumino-thermite with Iron and Steel, New Applications of, (Goldschmidt), 358
Amendment of the Electric Lighting Acts, 50
America(n), U.S., *see* Boston, La Grange, New York, *etc.*
Arc Lamps for Street Lighting, (Halberg), 370
Automatic Signalling in, and in Great Britain, (Cudworth), 176
Classification of Locomotive Types in, 222
Deposits of Magnetic Ore in, (Reis), 455
Experiments in Alloys for Bearing Purposes, (Clamer), 263
Foundry Management in, (Kirk), 170
Gas Engine Tests in, (Robertson), 266
Graphical Daily Balance in Manufacture in, (Gantt), 280
Locomotives from, in England, 320
Melting Equipment of Atlas Engine Works, Indiana, 170
New Cupola Slag Conveyor in, (West), 264
New Form of Extensometer in, (Summers), 259
New Works of the Lackawana Steel Co., 168
Oil Treatment for Leaks in Concrete in, 552
Principal Iron-making Centres of, as Competitors with Great Britain, 554
Railway and Lighting Storage Battery at Milwaukee, 369
Reinforced Concrete Floor, in, (Scofield), 352
Spier Falls Dam, Hudson River, (Howe), 259
Steam Engines made in, 269
Steam Turbine in, from an Operating Standpoint, (Waldron), 361
Tests of Piston and Slide Valves in, 269
Anodes, Scrap, Recovery of Nickel from, (Beckwith), 264
Appliance for Rivet-cutting, "Aspirant," 94
Applications of Electricity in Engineering and Shipbuilding Works, (Williamson), 180
Industrial, of Electrical Power, (de Marchena), 368
New, of Alumino-thermite with Iron and Steel, (Goldschmidt), 358
Arc, High-Tension Electrical Discharge, J.W.B., 94
Lamp (s), Electric, The Meridian, 543
—— for Street Lighting, U.S.A., (Halberg), 370
Slide-rest, Circle or, Design for, (Card), 367
Arches, Skew, Stresses on, (Kernot), 162, (Paige), 354
—— The Theory of, (Miller), 353
Arctic Lapland, Iron Ore of, (Osborn), 554
Armature of a Dynamo, Measuring the Moment of Inertia of the, (Fabry), 279
Arnold-Bragstad-Lacour Polycylic Power-Transmission System, Germany, (Bragstad), 179
Assimilation of Railway Practice in respect of Loads on Bridges up to 200ft. Span, (Ross), 164
Atlantic Type Locomotives on the East Coast Railways, 126
— — 4-4-2 in France and Germany, 507
Atlas Engine Works, Indiana, U.S.A., Melting Equipment of, 170
Atmospheric Air, An Electrical Method of Preparing Nitrogen Compounds from, (Rasch), 178
—— Discharges, Electric Plants and, (Benischke), 74
Automatic Signalling, British and American methods, (Cudworth), 176
—— Switch for Organ Motor Controllers on 500-volt circuits, R. C. H., 282
Automobile (s), *see* Electric *do.*
Axial and Modern Radial Turbines, Comparison between, (Pfarr), 461
Axles, Hollow Pressed, (M.R.), 262

BACILLUS COLI in Water, Practical Value of Presumptive Tests for, (Whipple), 575
Bacteriological Investigation of the Severn in the Shrewsbury District, (Boyce and others), 183
Balance, Graphical Daily, in Manufacture, U.S.A., (Gantt), 280
Balls for Valves, Turning, J.H.H., 186
Battery(ies), *see* Edison Storage, Electric, Primary, *and* Storage *do.*
and Coils for Gas-Engine Ignition, (Frost), 181
Beaches, Foreshore Protection and Travel of, (Douglass), 209
Bearing Purposes, A Study of Alloys suitable for, (Clamer), 263
Bearing(s), Lining up, of Electric Generating Plant, Q., R.L.H., 383
of Naval Engines, 563
Bending Block, A, J.A.M., 188
Moment, *see* Maximum Bending Moment
Benjamin, Prof. C. H., The Bursting of Emery Wheels, 243
Biological and Chemical Laboratories of New York Water Department, (Whipple), 80
Bitumen, The Testing of, (Dow), 352
Blast Furnace(s), By-Products and their Possible Recovery, H. Allen, 1
Equalisation of Hot Blast Temperature for, (Harrison), 169
Gas-Engines, (Kirchhoff), 556
Metal, Production of Open-hearth Steel from, (Talbot), 166
Processes, Potassium Cyanide and Nitrogen Reactions with, (Braune), 68
Slag, Portland Cement and, (Passow), 354
Temperature Reactions in, (Allen), 266
Block (*see* Swage Block), A Bending, J. A. M., 188
A Stretching, J. H., 477
Blondel Oscilograph, The, (Hale), 66
Blow-pipes in Workshops, uses of, Q. E. F., 474
Blowing Engines, Steam-driven and Gas-driven, (Westgarth), 268
Blue-Print Frame, A Rapid, (Randol), 472
Boiler(s), *see* Coned-Ring, Steam, Water-tube, *see also* Steamship Economy.
Explosions, How to Prevent, (Gifford), 172
and Furnace Efficiencies, Some Tests of, (Bement), 462
Expansion, Trouble with, J. H. T., 475
Scotch or Cylindrical Multitubular, (Nicholl), 462
Boring Bar with Adjustable Cutters, J. D., 284
Lathe, Temporary Running of a 4ft., R. V. C. Brook, 379
Machine, a Horizontal, Cutting Worm-wheels on, J. D., 283
Taper, F. B., 478
Wood Bowls, M. D., 190
Boston Elevated Railway, U.S.A., Failure of a Sea Wall connected with, and its Reconstruction, 551
— — — Foundations for the Elevated Structure of, (Kimball), 453
Bowls, Wood, Boring, M. D., 190

Branch, Fitting a, on a Valve Pattern, C. A., 187
Brass, Influence on, of Tellurium, (Dubois), 264
Castings, Porous, (Vickers), 453
Foundries, Melting Ratio in, (Buchanan), 457
Brasses, Adjusting, A. B., 382
Break, A, not a necessary part of the Induction Coil, (Rollins), 280
Bridge(s), *see* Steel Arched Bridge.
Curves of Maximum Bending Moment for, 68
Erection, Novel Method of, 549
King Edward VII. Bridge over the Thames at Kew, W. N. Twelvetrees, 61, 140
Loads on, up to 200ft. Span, Assimilation of Railway Practice in respect of, (Ross), 164.
Vauxhall Bridge, The L.C.C., and British Steel, 148
The Viaur Railway, France, J. W. Pearse, 200.
Bridge-Building, Scotch,
(I.) Findlay & Co.'s Works, Motherwell, G. Halliday, 131
Construction, Types and Details of, (Skinner), 166
Joints, Experiments on Granite Square Stones for, (Bach), 552
British and American Automatic Railway Signalling, (Cudworth), 176
Empire Trade, 331
Exports, "Free Trade," and, *table*, 426
Imports, increase of, 526
Industries, German Syndicates and, 238
Locomotive Engineering, Position of, 1903, 125-6
Steel, The London County Council v., 148
Triumph, A Notable, Success of the N. B. Loco. Co., 226-7
Brittleness of Steel, Testing the, (Izod), 552
Brooking, J. H. C., Trouble Prevention on Electric Mains, 301
Broughton, H. H., Case-Hardening, 128
Brushes, *see* Commutator *do.*
Burning and Overheating of Steel, (Stansfield), 356
Bursting, The, of Emery Wheels, Prof. C. H. Benjamin, 243
Speed of Emery Wheels, (Benjamin), 274
Butts, Lapped, The Riveting of, (Hogg), 273
By-Products from Blast Furnaces and Their Possible Recovery, H. Allen, 1

C. C., Rivet Spacing in Merchant Vessels Classed at Lloyd's, 322
Cables, High-Tension, Energy Losses in, (Apt and Mauritius), 569
Caledonian Railway, High-Capacity Wagons on, McIntosh *cited* on, 420
— — Novel Type of "Contractors," Locomotive Working on, the "John Best," 421
Calorimeter, Construction of, Q., M. G. C., 95
Canal Engineering, Recent Improvements in, (Fitz-Gibbon), 176
Candle-Power, Mean, (Russell), 570
Cannington Viaduct, 342
Capacities as Multipliers for Electrostatic Alternating-Current Voltmeters, (Marchant & Worrall), 567
Capacity of High-Tension Machines, Dielectric Hysteresis Losses, and, (Holitscher), 469
Capitalised Labour Organisation, a, Project for, (Redfield), 47
Car(s), *see* Electric *do.*
"Carbi" sack cells for Primary Batteries, 542
Carbon, Carbon Monoxide and Carbonic Acid, Action of, on Iron and its Oxides, (Baur & Glaessner), 69
Oxide and Hydrogen Explosions, Pressures occurring with, in Closed Vessels, (Langen), 70
Carbonic Acid, Carbon, and Monoxide Carbon, Action of, on Iron and its Oxides, (Baur and Glaessner), 69
Carnegie, Mr. A., Presidential Address by, before the Iron and Steel Institute, 336
Case-Hardening, (H. H. Broughton), 128
Cast-Iron, Malleable, (Moldenke), 264
—— Physical Properties of, as influenced by Process of Manufacture, (Moldenke), 265
The Microstructure of, (Longmuir), 264
Standard Test-Bars for, (Outerbridge), 455
Casting(s), (*see* Steel Castings), Method of examining Interior of, H. B., 90
Porous Brass, (Vickers), 453
Steam Cylinder, Composition and Strength of, (Wust and Goerens), 556
Temperatures, Varying, The Influence of, on the Properties of Alloys, (Longmuir), 359
Cavitation with Screw Ships, (Normand), 564
Cement, The Fatigue of, (Van Ornum), 354
Influence on, of Variations in Water and Sand, *table* (Larned), 451
Portland, and Blast Furnace Slag, (Passow), 354
—— —— Iron, (von Schwartz), 453
Cementation, Alleged, of Iron by Silicon (Stead), 72
Central (Electric) Stations, The Electric Automobile as an Income Producer for, (Ridley), 465
Centres, Large, for Pipe Turning, T. H. F., 187
Centrifugal Fans, Design and Testing of, (Gilbert), 73
Pumps, Experiments on the Efficiency of, (Stanton), 81
—— and Fans, Electric Motors for, (Bowie), 568
—— Steam Turbine-driven for High Lifts, (Darley), 560
Changes, Allotropic, of Iron and Its Alloys, (Boudouard), 69
Chemical Reactions at Extremely High Temperature, (Zenghelis) 472
Chubb, J. W., Coal Cutting by Machinery, 14
Chuck for Keyway Milling, S. F., 91
for Pattern Maker's Lathe, T. H. F., 91
Circle or Arc Slide-rest, Design for, (Card), 367
"Cire perdu" Process of Moulding, The, R., T. N., 95
Clark, H. A., The Diesel Engine, abstract of paper read at Leeds, 248
Classification of Locomotive Types, U.S.A., 222
Cleaning, The Sand-Blast, of Structural Steel, G. W. Lilly, 97
Climbing, Grades and, (by Locomotives), 271
Clips, *see* Pipe Clips.
Closed Vessels, Pressures occurring with Explosions of Hydrogen and Carbon Oxide in, 70
Coaching Stock, New, G C. Railway, 511
Coal, (*see* Steamship Economy).
Cutting by Machinery, J. W. Chubb, 14
Consumption of an Electric Plant, Rs., A. K., 96, E. M. C., 238
Coatings, Protective, for Iron and Steel, (Voorhees), 352
Coil(s), (*see* Induction Coil), Batteries and, for Gas-Engine Ignition, (Frost), 181
Collapses of Furnace Crowns, (Rounthwaite), 173
Combustion Engine, Internal, Performance of, (Halladay & Hodge), 360
Commissioners, The, of the 1851 Exhibition and the Proposed Technical College for London, 150
Commutator Brushes running in Oil, (Osnos), 567
Flanges, Large, Studs in, W. W., 477
Comparison between Axial and Modern Radial Turbines, (Pfarr), 461
Competition, *see* Foreign Competition
Competitors with Great Britain, The Principal Iron-making Centres of the U.S.A., as, 554
Composition of Sewage in relation to Problems of Disposal, (Fuller), 471
and Strength of Steam Cylinder Castings, (Wüst & Goerens), 556
Compound Engine, new 30·6 h.-p., Experience with, "Shift-Engineer," 474
Locomotives in Great Britain and Abroad, 124-5
—— Piston-Valves in, (Pel etier), 572
Compressed Air, Raising Water by, (Maxwell), 576, (Griffith), 376
Compression and Diffusion of Metal Filings, (Hof), 452
in the Gas-Engine, (Booth), 559
Concrete Floor, A Reinforced, U.S.A., (Scofield), 352
Foundations, (King), 353
Mixing-Machines, Efficiency of, (Coleman), 550
Oil Treatment for Leaks in, U.S.A., 552
Condensation, Water of, Oil Filters for, A. B., 378
Conditions Governing the Production of Steam Metal Alloys, P. Longmuir, 412, 501
Conducting Inside Conductors, Supporting and, (Falconar), 277
Conductivity, External, of Silver Wires Immersed in Water, (Rogoosky), 367
Conductors, Inside, Supporting and Conducting, (Falconar), 277
Conduits, Moisture in, (Murdoch), 552
Coned-Ring Boiler, The, 419
Conference, *see* Engineering Conference & Congress
Congestion of Railway Freight, (Herron), 466
Congress, *see* "Houille Blanche" Congress
Construction, *see* Materials *and* Method of Construction
of Calorimeter, Q., M. G. C., 95
The, of Docks, A. MacLachlan, 43
The, of Electric Machines, Mild Steels as employed in, (Charpy), 569

Construction, Nickel Steel for Purposes of, (Watson), 357
of Propellers, Q., M. G. C., 95
and Working of Machine Reamers and Reaming Heads, (Bruce-Bail), 78
Contact, Metal Plating by, (Darlay), 467
Continuous-Current Dynamo Design, Economy in, (Purton), 276
—— Motors, Speed Regulation of, (Rogers), 367
"Contractors'" Locomotive, Novel Type of, the "John Best," 421
Controllers, *see* Organ Motor *do.*
Converter, *see* Small *do.*
Conveyor, *see* Slag Conveyor
Core for Dams and Reservoir Embankments, Macadam as a, 260
Core-making Machines, Foundry, J. R. Kelly, 489
Corliss Engine, Double-Eccentric, Valve Setting on a, (Bi-sell and Dow), 464
—— Positive Governor Drives for, (Eldridge), 268
Corrosion of Metals in Sea-water, (Diegel), 376
Cost of Electric Power in Factories, (Lloyd), 567
Countersink ng Girders, H.L., 381
Couplings, *see* Shaft Couplings
Coverings, *see* Non-conducting Coverings
Crane Construction, Modern, G. W. Rushworth, 400
Cranes, Electric, Defective, (Williams), 467
Electric Gantry, the best type of, Q., R. L. H., 383
Speeds of, and Economic Handling of Material, (Head), 366
Cross-Channel Turbine Steamer "Queen," The New, 58
Crossing or Junction Diagram, Points and, (Atkinson), 464
Crystallisation, Dangerous, of Mild Steel and Wrought Iron, (Arnold), 169
of Iron and Steel, (Dob e), 457
Cupola Slag Conveyor, A New, U.S.A., (West), 264
Current(s), *see* Alternate, Alternating, Continuous and Direct, *and* Wave
Pressures, Standard Direct, 528
Curvature, Relation of Speed to, 364
Curves, (*see* Blondel Oscillograph), of Maximum Bending Moment, for Spans of Bridges, (Bell), 68
Cutters, (*see* Rotary Cutters), Adjustable, Boring Bar with, J. D., 284
Cutting, Accurate, and Testing of Screws, (Orr), 272
of Coal by Machinery, J. W. Chubb, 14
a Thread on an Elbow-pipe, H. W., 477
Worm-wheels on a Horizontal Boring Machine, J. D., 283
Cyanide, *see* Potassium Cyanide
Cylinder(s) Castings, *see* Steam *do.*
Position on 4-6-0-type Locomotives, 510
Steam-Engine, Re-facing, C. A., 283
Repair to, E Fleming, 476
Water in, Draining Steam Pipes, R., J. Green, 383
Cylindrical Multitubular Boilers, Scotch or, (Nicholl), 462

Daily Balance, Graphical, in Manufacture, U.S.A., (Gantt), 280
Dales, J. H., High Speed Engines; Valves, 395
Dam(s), Macadam as a Core for, or for Reservoir Embankments, 260
at Spier Falls, Hudson River, U.S.A., (Howe), 259
Temporary, (Kenyon), 454
Dangerous Crystallisation of Mild Steel and Wrought Iron, (Arnold), 169
Dangerously Crystalline Steel, The Restoration of, by Heat Treatment, J. E. Stead and A. W Richards, (*see also* p. 358), 306
Decimal Measures, *see* Gray, R. K., Presidential Address delivered by
Deep-level and Shallow Subways, (Cottrell), 177
Defective Electric Cranes, (Williams), 467
de Glehn Compound Locomotive, de Glehn *cited* on advantages claimed for, 225
Compound System for Locomotives, 125
Denmark, Wind-power for Electric Central Stations in, (La Cour), 278
Design for a Circle or Arc Slide-rest, (Card), 367
of Continuous Current Dynamos, Economy in the, (Purton), 276
of Direct-Current Machines, Influence of Number of Revolutions on, (Hobart), 570
Effect of, on Methods of Construction, (Newman), 68
of Marine Engines, (Calder), 174
of Permanent Way and Locomotives for High Speeds, (Inglis), 175
Design of Slope-Walls, 164
and Testing of Centrifugal Fans, (Gilbert), 73
Destructors, Refuse, (Massey), 281
Determining the Percentage of Manganese in Steel, (Mallette), 171
the Percentage of Oxygen in Ingot-Iron and Steel, (Lurmann, junr.), 171
Development and use of the Small Electric Motor, (Kimball), 182
Diagram(s) for Estimating Hydraulic Machinery, (Kleinhaus), 573
of Points and Crossing or Junction, (Atkinson), 464
Dielectric Hysteresis Losses and Capacity of High-Tension Machines, (Hotitscher), 469
Strength of Highly Insulating Substances, New Process for Determining, (Walter), 569
Diffusion and Compression of Metal Filings, (Hof), 452
of Sulphide through Steel, Experiments on the, (Campbell), 357
Diesel Engine, The, H. A. Clark, abst. of paper read at Leeds, 248
Dimensions for Flanged Shaft Couplings, (Bunnell), 366
of Gusset Plates, Q., Ecittat, 288, R. W.N.T., *ib.*
Direct-connected 8-ft. Fan and Engine, Tests of, (Farwell), 372
-Current Machines, Design of, Influence on, of Number of Revolutions, (Hobart), 570
-Current Pressures, Standard, 528
Discharge, High-Tension Arc Electrical, J.W.B., 94
Discs and Segments, Manufacture of Armature, (Woodforth), 75
Disposal of Sewage, Composition of Sewage in relation to Problems of, (Fuller), 471
Dock(s), The Construction of, A MacLachlan, 43
Floating, for Durban, and Floating Workshop, 517
The Modern Equipment of, Hydraulic and Electric Appliances, (Pitt), 261
Donaldson, H. B., Some Notes on Steamship Economy, 385
Double-eccentric Corliss Engine, Valve Setting on, (Bissell & Dow), 464
Drafting Room, (*see also* Drawing Office), the Modern, Mechanical Drawing in, (Follows), 574
Drawing, Mechanical, in the Modern Drafting Room, (Follows), 574
Office Equipment, Little's Universal Drafting Machine, (McGeorge), 575
Dredger, A New Suction, (Fruhling's), 153
Dredging with Rotary Cutters, (Apjohn), 165
Drills, *see* Rock Drills
Drilled *v.* Punched Rivet-holes in the Hulls of Ships, (Yarrow), 563
Drilling a Hole with a Turret Lathe, T. B., 89
Jig, A., "Mechanic," 92
Drinking-Water, Sterilisation of, by Ozone, (Proskauer and Erlwein), 375
Drives, (*see* Governor Drives), and Feeds for Machine Tools (Obert), 177
Driving, (*see* Electric Driving), Fits . . . (Moore), 574
Drop Forging, (Goddard), 460
Drummond, D., Latest Locomotive designed by, for L. & S.W. Railway, 223
Drying by Electricity, (Townsend), 76
Durban, Floating Dock and Workshop for, 517
Dust, Electrically-deposited, The Prevention of, (Munro), 277
Dynamo(s) Design, Economy in Continuous-Current, (Purton), 276
Internal-Combustion Engines for, (Humphrey), 171
Iron Losses in, (Press), 568
Measuring the Moment of Inertia of the Armature of a, (Fabry), 279

Earth, Rôle of, in Wireless Telegraphy, (Koepsel), 181
East Coast Railways, Atlantic Type Locomotives on, 126
Economic Handling of Material, Speeds of Cranes and, (Head), 366
Economy in Continuous-Current Dynamo Design, (Purton), 276
of Electric Light Equipment in Small Factories, (Runyon), 73
and Power of the Gas Engine as Influenced by the Fuel, (Flint), 559
Steamship, Some Notes on, H. B. Donaldson, 385
Edison-Jungner Accumulator, The, (Schoop), 368
Storage Battery, The, 529

Education of Engineers, The, 333
Effect of Design on Methods of Construction, (Newman), 68
Efficiency of Centrifugal Pumps, Experiments on, (Stanton), 81
of Concrete Mixing Machines, (Coleman), 550
of Hoisting Tackle, Tests of, (Mitchell), 547
of Non-conducting Coverings for Steam Piping, Hudson-Beare Experiments on, (Bolam & Grieve), 364
The Thermal, of Hot-Blast Stoves, (Thwaite), 70
Egyptian Water Problem, The, (W. N. Twelvetrees), 214
Elbow-Pipe, Cutting a Thread on an, H. W., 477
Electric Appliances, *see* Accumulating Batteries, Dynamos, Generators, Lamps, *etc.*
Lamp, The Meridian, 543
Automobile, The, as an Income Producer for Central Stations, (Ridley), 465
Batteries, Theory of, (Rossel), 279
Cars, Energy losses on, (Park), 270
Central Stations, Wind Power for, Denmark, (La Cour), 278
Cranes, Defective, (Williams), 467
Driving in Machine Shops, (Chatwood), 177
Furnace, (Townsend), 76
Gantry Cranes, the best type of, Q., R. L. H., 383
Generating Plants, Steam Turbine-driven, (Wilkinson), 566
High-speed Railways, Marienfelde-Zossen High-speed Trials, 518
and Hydraulic Appliances, Modern Equipment of Docks, (Pitt), 261
Light Equipment, Economy of, in Small Factories, (Runyon), 73
Lighting Acts, Amendment of, 50
Machines, Mild Steels as Employed in the Construction of, (Charpy), 569
Mains, Trouble Prevention on, J. H. C. Brooking, 301
Motor(s) for Centrifugal Pumps and Fans, (Bowie), 568
the Small, Development and Use of, (Kimball), 182
Plant(s) and Atmospheric Discharges, (Benischke), 74
Coal Consumption of an, R., A. K. 96, E. M. C., 288
Failures, (Cormack), 469
Output of, R., A. K., 96
Power in Factories, Cost of, (Lloyd), 567
—— for Factories, (Highfield), 73
Railways, Freight and Express on, (Cooper), 72
Rock Drills, (Munby), 467
Traction, Tangential, 466
Work, Porcelain for, (Bainville), 352
Electrical Discharge, High-Tension Arc, J. W. B., 94
Machines, Separating the Losses by Friction in, (Finzi), 279
Method of Preparing Nitrogen Compounds from Atmospheric Air, (Rasch), 178
Oil-Testing Apparatus, New German, (Perkins), 548
Power, Industrial Applications of, (de Marchena), 368
Purposes, Mica for, 66
Units, Modification of Existing System of, 66
Electrically Deposited Dust, The Prevention of, (Munro), 277
Electricity, (*see* Applied Electricity), Applications of, in Engineering and Shipbuilding Works, (Williamson), 180
Drying by, (Townsend), 76
for Hospitals, (Twelvetrees), 274
Meters, Reliable Seal for, R., F.S., 96
Testing of, R., J. W. B., 191
in Mines, (Futers), 468
Electrification on existing railways, and in connection therewith, 123
of Steam Railways, (Parry), 571
Electro-Magnets, Lifting by, (Willey), 184
Electrolysis by Alternate Currents, (Le Blanc and Schick), 369
Galvanising Iron by, (Jouve), 278
in the Industry of Inorganic Products, Use of, (Brandeis), 369
Electrolytic Production of Vanadium and its Alloys, (Gin), 279
Electro-meters in Small Industries, Use of, (Löwit), 368
Electrostatic Alternating-Current Voltmeters, Capacities as Multipliers for, (Marchant & Worrall), 567
Elimination of Platinum from Incandescent Lamps, (Bainville), 470
Embankments, *see* Reservoir Embankments
Emery Wheels, The Bursting of, Prof. C. H. Benjamin, 243
Bursting Speed of, (Benjamin), 274
Emission and Transmission of Heat, 470
Energy Losses on Electric Cars, (Park), 270
in High-tension Cables, (Apt and Mauritius), 569
Engine(s), *see* Blowing, Combustion, Compound, Corliss, Diesel, Gas, Heat, Internal Combustion, Locomotive, Marine, Mill, Naval, Oil, Steam, Sulphur-Dioxide, *and* Tank Engines
Fan and, Tests of a direct-connected 8-ft., (Farwell), 372
Fuel Oil for, (Rowland), 559
High Speed, J. H. Dale, Valves, 395
The Horse-power of an, on what it depends, R., E. H. D., 95
Way of Modernising Old, J. C., 381
Engineering Abstracts:—
Applied Electricity, 73, 178, 274, 367, 467, 566
Constructional, 68, 162, 259, 352, 453
Engineering Physics, 548
Iron and Steel, 69
Lighting, Heating, etc., 73, 182, 370, 470, 570
List of Publications regularly reviewed, 64, 257, 350, 449, 545
Marine Engineering, 563
Materials and Measurements, 66, 161, 259, 352, 451, 547
Mechanical, 77, 177, 272, 366, 466, 572
Metallurgy, 68, 166, 262, 355, 455
Miscellaneous, 82, 184, 281, 376, 472
Names of Abstractors, 473
Naval Architecture, 561
Prime Movers, 70, 171, 266, 360, 461, 556
Traction, 72, 175, 269, 364, 464, 571
Water and Sanitary, 182, 280. 375, 471, 576
Waterworks and Sewerage, 80
Works Management, 78, 183, 280. 372, 471, 574
Engineering Conference, I.C.E., "James Forrest" Lecture delivered by W. H. Maw at, 53
The, of Illumination, (Mr. Lansingh's paper), 436, 512
Progress, 58, 153
and Ship-building Works, Application of Electricity in, (Williamson), 180
Some unsolved Problems in, ("James Forrest" Lecture by W. H. Maw), 53
Engineers, The Education of, 333
Enlarging an Old Hydraulic Press, J. H., 186
Entropy, (Gray), 549; (Swinburne), 463
a new Text-Book, review, W. C. H., 327
Equalisation of Hot-Blast Temperature for Blast Furnaces, (Harrison), 169
Equipment, *see* Small Factories.
Equivalent of Heat, *see* Heat.
Erecting- and Fitting-Shop Management, (Browne), 183
Escape of Saturated Water Vapour, (Schule), 175
Estimating Hydraulic Machinery, Diagrams for, (Kleinhaus), 573
Evolution of the Starting Switch, (A. H. M.), 468
Exhaust Steam Injectors for Locomotives, (Davies & Metcalfe's), 422
Exhibition, The, of 1851. The Commissioners of, and the Proposed Technical College for London, 150
Expansion of Boiler, Trouble with, J. H. T., 475
Experience with a new 30-b.h.p. Compound Engine, "Shift-Engineer," 474
Experiments on the Diffusion of Sulphide through Steel, (Campbell), 357
on the Efficiency of Centrifugal Pumps, (Stanton), 81
on Granite Square Stones for Bridge Joints, (Bach), 552
Hydraulic, on a Plunger Pump, (Goodman), 81
Hudson-Beare, on the Efficiency of Non-conducting Coverings for Steam Piping, (Bolam & Grieve), 364
with Rapid-Cutting Steel Tools, 530
on the Resistance of a Screw Steamer in Free Route, (Enno Van Gelder), 561
Experimental Treatment of Sewage Containing Trade Waste at Huddersfield, (Campbell), 375
Explosions of Boilers, How to prevent, (Gifford), 172
of Hydrogen and Carbon Oxide, Pressures occurring with, in Closed Vessels, (Langen), 70
Motors, Peculiarity of, (Mathot), 361
Exports, *see* British *do.*
Express and Freight on Electric Railways, (Cooper), 72
Extensometer, New Form of, U.S.A. (Summers), 259
External Conductivity of Silver Wires Immersed in Water, (Rogoosky), 367

Eye-bars, 18-inch Steel, The Making of, (Webster), 572

FACTORY (IES), Cost of Electric Power in, (Lloyd), 567
Electric Power for, (Highfield), 73
Small, Economy of Electric Light Equipment in, (Kenyon), 73
and Workshops, Ventilation of, 370
Management, Preparation for, (Diemer), 374
Failure (s), of Electric Plant (Cormack), 469
of a Sea-Wall and its Re-construction, U.S.A., (Fernald), 551
Fan(s), *see* Centrifugal Fans *and* Pumps and Fans.
and Engine, Tests of a Direct-connected 8-ft., (Farwell), 372
Fatigue of Cement, The, (Van Ornum), 354
Feeds and Drives for Machine Tools, (Obert), 177
Filings, *see* Metal *do.*
Filters, Oil, for Water of Condensation, A. B., 378
Findlay, A. and Co.'s Motherwell Works for Bridge Building, G. Halliday, 131
Fits, Forcing, Shrinking, Driving and Running, (Moore), 574
Fitting a Branch on a Valve Pattern, C. A., 187
of Pipe, (Ripley), 77
-and Erecting-Shop Management, (Browne), 183
Fixing Grindstones, (W. Burns), 286
Shafting, "Millwright," 91
Flanged Shaft Couplings, Dimensions for, (Bunnell), 366
Flanges, Large Commutator, Studs in, W. W., 477
"Flitch" Dams, (Kenyon), 454
Floating Dock and Workshop for Durban, 517
Floor, A Reinforced Concrete, U.S.A., (Scofield), 352
Fly-wheel Rim Joints, (Burlingham), 273
Forcing, Shrinking, Driving and Running Fits, (Moore), 574
Foreign Competition, How Great Britain is Meeting,
V. Scotch Bridge Building,
(I.) Messrs. A. Findlay & Co.'s Works, Motherwell, G. Halliday, 131
Countries, Compound Locomotives in, 125
Foreshore Protection and Travel of Beaches, (Douglass), 25
Forging, Drop, (Goddard), 460
Foster, F., Superheating by Wire-Drawing, 193
Foundations, (Francis), 550
Concrete, (King), 353
for the Elevated Structure, Boston Elevated Railway (Kimball), 453
Foundry(ies) (*see* Brass *do.*)
Coke-Making Machines, J. R. Kelly, 489
Management in America, (Kirk), 170
Shop Orders, (McDowell), 78
Four-Cylinder Gas Engine, A, (Fielding & Platt's), 157
Frame, *see* Blue-Print *do.*
France, (*see* "Houille Blanche"), Atlantic 4-2-2-type Locomotives in, 507
Free Route, Resistance of a Screw Steamer in, Experiments on (Enno Van Gelder), 561
"Free Trade" and British Exports, *tables*, 426
Freight Congestion on Railways, (Herron), 466
and Express on Electric Railways, (Cooper), 72
Frequencies, Standard, 528
Friction, Separating the Losses by, in Electrical Machines, (Finzi), 279
Fuel (*see* Liquid *do.*), Oil for Engines, (Rowland), 559
and Power, (Linde), 281
Power and Economy of the Gas-engine as influenced by, (Flint), 559
Furnace s), *see* Blast Furnaces.
Crowns, Collapses of, (Rounthwaite), 173
Efficiencies, Some Tests of Boiler and, (Bement), 462
Electric, (Townsend), 76

GALVANISING Iron by Electrolysis, (Jouve), 278
Gas (*see* Lighting Gas), Modern Heating, Lighting and Power, (Thomae), 371
Gases and Vapours, Streams of, through Tubes with Variable Section, (Lorenz), 559
Gas-driven and Steam-driven Blowing Engines, (Westgarth), 268
Gas-Engine(s), Blast-furnace, (Kirchhoff), 556
Compression in, (Booth), 559
Power and Economy of, as influenced by the Fuel, (Flint), 559
Four-Cylinder, (Fielding and Platt's), 157
Ignition, Batteries and Coils for, (Frost), 181
Repairs, H. T. M., 377
Testing, (Oliver), 362
Tests, U.S.A., (Robertson), 266
Gas-Plants, Suction, Tests of, (Bräuer), 558
Gas-Producer, Some Recent Forms of, (Sexton), 267
Gauges, (*see* Pressure Gauges), and Standards as affecting Shop and Manufactory Administration, (Marshall), 373
Gears, (*see* Valve Gears), Grisson, Construction of, (Grisson), 77
Generating Plants, Electric, Steam Turbine-driven, (Wilkinson), 566
Generator, Polyphase, New Type of Induction Machines and, Heyland's, (Eborall), 275
German(y) *see* Munich
Arnold-Bragstad-Lacour PolycyclicPower-Transmission System in, (Bragstad), 179
Atlantic 4-4-2 type Locomotives in, 507
Electric High-speed Trials in, on the Marienfelde-Zossen Railway, 518
Syndicates and British Industries, 238
New Electrical Oil-Testing Apparatus, (Perkins), 548
Promise and performance in, *see* Notable British Triumph
Girders, Countersinking, H. L., 381
Governor Drives, Positive, for Corliss Engines, (Eldredge), 268
Grades and Climbing (by Locomotives), 271
Granite Square Stones, for Bridge Joints, Experiments on, (Bach), 552
Graphical Daily Balance in Manufacture, U.S.A., (Gantt), 280
Gray, R. K., Presidential Address delivered by, to the Institution of Electrical Engineers, 525
Great Britain (*see* also British), Advent of the de Glehn Compound Locomotive in, 225
Compound Locomotives in, 124
How she is meeting Foreign Competition
V. Scotch Bridge Building. (I.) G. Halliday, 131
Great Central Railway, The, and London, 227
— New Coaching Stock on, 511
— New Route to London, Neasden-Northolt, 316
errata 511
— Railway, Smart Work on, 421, a correction, 475
Great Northern Railway, Atlantic-type Locomotives on, 126
Great Western Railway, de Glehn Compound Locomotive ordered by, 225
— — experimental adoption of the de Glehn Compound locomotive by, 125
— — locomotives with Coned-ring Boilers, 419
Greatest Available Service of Power in the World, (Victoria Falls, Zambesi River), 433
Grinding Reamers, "Gauger," 475
Grindstones, Fixing, W. Burns, 286
Grisson Gears, construction of, (Grisson), 77
Guide, A Screw-cutter's, J.G., 478
Gusset Plates, Dimensions of, Q., Ecittal, 288, R., W. N. T., *ib.*

H., W. C., Entropy, a new Text-Book, *review*, 327
Halliday, G., Messrs. A. Findlay and Co.'s Bridge Building Works, Motherwell, N.B., 131
Handling, *see* Economic Handling
Hard and Mild Ingot-Irons as Materials of Construction, (Eichhoff), 67
Heat, Emission and Transmission of, 470
Engines, and the Problem of Liquid Fuel, (Diesel), 461
The Mechanical Equivalent of, (Hering), 67
Treatment, The Restoration of Dangerously Crystalline Steel by, J. G. Stead and A. W. Richards, (*see also* p. 358), 306
—— of Steel under Steelworks Practice, (Campion), 168
Heat-Power Plants, New Theory of, (Smith), 268
Heating, Lighting, and Power Gas, Modern, (Thomae), 371
Plants, Testing, (Dye), 371
and Ventilating Railway Shops, (Gifford, and Child), 182
High-Capacity Wagons on the Caledonian Railway, McIntosh, *cited* on, 420
Lifts, Steam Turbine-driven Centrifugal Pumps for, (Darley), 560
-Speed(s) Engines, J. H. Dales—Valves, 395
——, Design of Permanent Way and Locomotives for, (Inglis), 175
—— on Railways, 464
—— Tool Steels, Notes on, (Suplee), 466
—— Trials on the Marienfelde-Zossen Electric Railway, 518
Temperatures, (*see* Temperatures, Extremely High), Production of, by means of Thermite, (Caldwell), 556

High-Tension Arc Electrical Discharge, J. W. B., 94
——Cables, Energy Losses in, (Apt & Mauritius), 569
——Machines, Capacity of, Dielectric Hysteresis Losses and, (Holitscher), 469
Highly Insulating Substances, the Dielectric Strength of a New Process for Determining, (Walter), 569
Hoisting Tackle, Tests of the Efficiency of, (Mitchell), 547
Holes, (*see* Rivet-holes), Drilling, with Turret Lathes, T. B., 89
Hollow-Pressed Axles, M. R., 262
Horizontal Boring Machine, A, Cutting Worm-wheels on, J. D., 283
Horse-Power of an Engine, on what it depends, R., E H. D., 95
Hospitals, Electricity for, (Twelvetrees), 274
Hot-Blast Stoves, The Thermal Efficiency of, (Thwaite), 70
—— Temperature for Blast Furnaces, Equalisation of, (Harrison), 169
"Houille-Blanche" Congress in France, M. F. Loppé, 28, 228
How Great Britain is Meeting Foreign Competition,
V. Scotch Bridge Building,
(I.) Messrs. A. Findlay & Co.'s Works, Motherwell, G. Halliday, 131
How to Prevent Boiler Explosions, (Gifford), 172
Huddersfield, Experimental Treatment of Sewage containing Trade Waste at, (Campbell), 375
Hudson River, U.S.A., The Spier Falls, Dam Across, (Howe), 259
Hulls of Ships, Drilled *v.* Punched Rivet-holes in, (Yarrow), 563
Hurst, C., The Valve-Gears of Modern Mill Engines, 289
Hydrate of Lime, Manufacture and Properties of, (Brigham), 452
Hydraulic and Electric Appliances, Modern Equipment of Docks, (Pitt), 261
Experiments on a Plunger Pump, (Goodman), 81
Machinery, Diagrams for Estimating, (Kleinhaus), 573
Press, an Old, Enlarging, J. H., 186
Ram, Q., E. H. P., 95
Screw Press, Small, G. E., 478
Unit, A Suggested, (Montagu), 549
Hydrogen and Carbon Oxide Explosions, Pressures occurring with, in Closed Vessels, (Langen), 70
Iron and, (Wedding & Fischer), 265
Hydroscope, Pino's, (Iberti), 182
Hysteresis, *see* Dielectric *do.*

Ignition of Gas-Engines, Batteries and Coils for, (Frost), 181
Illumination, The Engineering of, 436, 512
Imports, British, Increase of, 526
Improved Trammel-Head, An, A. C. K., 382
Improvements in Primary Batteries, 542
Recent, in Canal Engineering, (Fitz-Gibbon), 176
Incandescent Lamps, Elimination of Platinum from, (Bainville), 470
Income Producer for Central Stations, The Electric Automobile as an, (Ridley), 465
Increase of British Imports, 526
Magnetic, of Traction, 271
Induction Coil, the, A Break not a necessary part of, (Rollins), 280
Machines and a New Type of Polyphase Generator, Heyland's, (Eborall), 275
Industrial Applications of Electrical Power, (de Marchena), 368
Industry of Inorganic Products, Use of Electrolysis in, (Brandeis), 369
Industries, *see* Small Industries
Inertia, Measuring the Moment of, of the Armature of a Dynamo, (Fabry), 270
Influence of Number of Revolutions on Design of Direct-Current Machines, (Hobart), 570
of Silicon on Iron, (Baker), 355
of Sulphur and Manganese on Steel, (Arnold & Waterhouse), 70
of Tellurium on Brass, (Dubois), 264
of Variations in Water and Sand on Cement, *table*, (Larned), 451
of Varying Casting Temperatures on the Properties of Alloys, (Longmuir), 359
Ingenious Valve-gear, An, (Reikie & McIntosh's), 510
Ingot-Iron(s), Hard and Mild, as Materials of Construction, (Eichhoff), 67
——in Naval Construction, (Benjamin), 170
——and Steel, Determining the Percentage of Oxygen in, (Lurmann, junr.), 171
Injectors, Exhaust Steam, for Locomotives, (Davies & Metcalfe's), 422
Inorganic Products, Use of Electrolysis in the Industry of, (Brandeis), 369
Inside Conductors, Supporting and Conducting, (Falconar), 277
Institute, *see* Iron and Steel Institute
Institution of Civil Engineers Conference, "James Forrest," Lecture by W. H. Maw at, 53
of Electrical Engineers, Mr. R. Kaye Gray's Presidential Address to, 525
Insulating Substances, *see* Highly Insulating *do.*
Integrating Planimeter, A New, 115
Interior of Castings, Method of Examining, H. B., 90
Internal Combustion Engine, *see* Combustion Engine
—— Engines for Dynamos, (Humphrey), 171
Introduction to the Study of Alloys, (Howe), 358
Investigations in the Production of Superheated Steam, (Berner), 558
Irrigation, The Use of Sewage for, after Treatment in Septic Tanks in Tropical Countries, E. O. Mawson, 481
Iron, *see* Case-Hardening, Cast-Iron, Ingot-Iron, Wrought Iron
Alleged Cementation of, by Silicon, (Stead), 70
and its Alloys, Allotropic Changes of, (Boudouard), 69
Galvanising, by Electrolysis, (Jouve), 278
and Hydrogen, (Wedding & Fischer), 265
The Influence of Silicon on, (Baker), 355
Losses in Dynamos, (Press), 568
Nickel, and Manganese, Alloys of, (Hadfield), 166
Ore of Arctic Lapland, (Osborn), 554
and its Oxides, Action of Carbon, Carbon Monoxide, and Carbonic Acid on, (Baur & Glaessner), 69
Paints used for the Protection of, Tests applied to, (Gill and Johnson), 161
Passive State of, (Burgess), 555
in Railway Constructions, (Haarmann), 170
-making Centres, The Principal, of the U.S.A., as Competitors, 554
Iron and Steel, Crystallisation of, (Doble), 457
—— Manufacture, R., EXPERIENCE, 192
—— The Metallography of, (Howe), 456
—— Molecular State of, Novel Method for Ascertaining, (Sandarán), 455
—— New Applications of Alumino-thermite with, (Goldschmidt), 358
—— Protective Coatings for, (Voorhees), 352
—— Volumetric Estimation of Manganese in, (Walters), 456
—— Institute, Mr. A. Carnegie's Presidential Address before the, 336
Portland Cement, (von Schwarz), 453
and Tungsten, Alloys of, (Hadfield), 458

Jig, A Drilling, "Mechanic," 92
Joints, *see* Bridge Joints *and* Rim Joints
Junction Diagram, Points and Crossing or, (Atkinson), 464

Kelly, J. R., Foundry Core-making Machines, 489
Kew, King Edward VII. Bridge over Thames at, 61, 140
Keyway Milling, Chuck for, S. F., 91
King Edward VII. Bridge over the River Thames at Kew, 61, 140
Körting System of Burning Oil Fuel in Steamships, 516

Laboratories, Biological and Chemical, of New York Water Department, (Whipple), 80
Laboratory, Metal Testing of the National Conservatoire of Arts and Crafts, Paris, (Breuil), 458
Labour Organisation, a Capitalised, Project for, (Redfield), 471
Premium System of Remunerating, (Schiller), 374
Lackawana Steel Co., U.S.A., New Works of, 168
La Grange, Ill., U.S.A., The Septic Tank at, (Ewing), 80
Lake, C. S., Notes on Locomotive and Railway Engineering, 123, 222, 316, 419, 507
Lamps, (*see* Arc Lamps), Mean Candle-power of, (Russell), 570
Incandescent, Elimination of Platinum from, (Bainville), 470
Meridian Electric Arc, 543
Lapland, Arctic, Iron Ore of, (Osborne), 554
Lapped Butts, The Riveting of, (Hogg), 273
Large Centres for Pipe Turning, T. H. F., 187
Commutator Flanges, Studs in, W. W., 477
Lathe(s), *see* Boring, Pattern-makers, *and* Turret Lathes
Lathe-Shop Truck, A, F. H., 471

Lawn Mower, Petrol Motor, (Ransomes, Sims & Jefferies'), 159
Leaks in Concrete, Oil Treatment for, U.S.A., 552
Ledger, The Stores, (Johnson), 280
Leeds, abst. of paper read at, The Diesel Engine, H. A. Clarke, 248
Levelling and Testing a Surface Table, "Thamis," 88
Leven Viaduct, The Accident at, 260
Lifting by Electro-Magnets, (Willey), 184
Lifts, High, Steam Turbine-driven Centrifugal Pumps for, (Darley), 560
Lighting, (*see* Electric Lighting), Gas, The Relation of Sulphur in, to Air Vitiation, (Haldane), 470
and Power Gas, Heating, Modern, (Thomas), 371
Storage Battery, Railway and, at Milwaukee, U.S.A., 369
Street, Arc Lamps for, U.S.A., (Halberg), 370
Lilly, G. W., The Sand-Blast Cleaning of Structural Steel, 97
Lime, *see* Hydrate of Lime
Lining-up Bearings of Electric Generating Plant, Q., K. L. H., 383
Liquid Fuel, Heat Engines and the Problem of, (Diesel), 461
Lloyd's, Merchant Vessels Classed at, Rivet Spacing in, C.C., 322
Locomotion, Petrol Motors for, (Sauvage), 365
Locomotive and Railway Engineering, *see* Notes on
Locomotive(s), *see* Atlantic 4-4-2-type *do.* de Glehn Engines, Steam, *etc.*
Compound, Piston-valves in, (Pelletier), 572
Exhaust Steam Injectors for, (Davies and Metcalfe's), 422
4-6-0-type, Cylinder Position on, 510
of the 4-6-0-type, Increasing popularity of, 222
for High Speeds, Design of Permanent Way and, (Inglis), 175
Modern, The Proportions of, (Fry), 571
Newest, designed by Drummond for the London and South-Western Railway, 223
Novel Type of "Contractors," the "John Best," 421
Performance on the London and South-Western Railway, Drummond *cited* on, 423
"Smith" system for, An Unfounded Rumour concerning, 425
Superheated Steam and, (Berner), 172
Superheated Steam for, 320
Superheaters for, (Low), 272
Types, Classification of, U.S.A., 222
Work done by, in Climbing a Grade, 271
London County Council *v.* British Steel, 148
London, The Great Central Railway and, 227
New Great Central Route to, Neasden-Northolt, 316
Proposed Technical College for, The Commissioners of the 1851 Exhibition and, 150
to Sheffield Without a Stop, 319
London Brighton and South Coast Railway Improvements, Erection of Bridge, 73
London and North Western Railway, An Unfounded Rumour concerning, 425
— — — — and others, The "Piloting" System on, 425
— — — — Webb's Compound Locomotives on, 124—5
London and South Western Railway, Locomotive Performance on, Drummond *cited* on, 423
— — — — latest Drummond design, Locomotive on, 223
London, Tilbury and Southend Railway, New Scottish-built tank Engines for, 127
Longmuir, P., Conditions Governing the Production of Steam Metal Alloys, 412, 501
Loppé, M. F., The "Houille-Blanche" Congress in France, 28, 228
Losses, Dielectric Hysteresis and Capacity of High-Tension Machines, (Holitscher), 469
Energy in Electric Cars, (Park), 270
in High-Tension Cables, (Apt & Mauritius), 569
by Friction in Electrical Machines, Separating, (Finzi), 279
Iron, in Dynamos, (Press), 568

Machine(s), *see* Boring, Concrete Mixing, High-Tension, Induction, *etc.*
-Shop(s), Electric Driving in, (Chatwood), 177
— Problem The, (Day), 575
Tool Feeds and Drives (Obert), 177
Machinery, (*see* Hydraulic *do.*), Coal Cutting by, J. W. Chubb, 14
New, at the Royal Agricultural Show, 158
MacLachlan, A., The Construction of Docks, 43
Magnetic Increase of Traction, 271
Separation of Ores, Recent Advances in, (Fabre), 472
Magnetite Deposits, U.S.A. (Reis), 455
Mains, *see* Electric Mains
Maintenance and Management of a Modern Pattern Shop, Organisation of, (Gobeille), 375
Making, The, of 18-inch Steel Eye-bars, (Webster), 572
Malleable, Cast-Iron, (Moldenke), 264
— The Physical Properties of, as influenced by Process of Manufacture, (Moldenke), 265
Management (*see* Factory Management) of Fitting and Erecting Shops, (Browne), 183
of Foundries in America, (Kirk), 170
Manganese, Alloys of Iron, Nickel, and, (Hadfield), 166
Iron and Steel, Volumetric Estimation of, (Walters), 456
in Steel, Determining the Percentage of, (Mallette), 171
Steels, Researches on, (Guillet), 359
Sulphur and, Influence of, on Steel, (Arnold & Waterhouse), 70
Manufactory Administration, Shop and Gauges and Standards as affecting, (Marshall), 573
Manufacture of Armature Discs and Segments, (Woodforth), 75
Graphical Daily Balance in, U.S.A., (Gantt), 280
and Properties of Hydrate of Lime, (Brigham), 452
of Steel Castings, The Small Converter Process for, (Simonson), 64
Marienfelde-Zossen High-speed Trials, 518
Marine Engine Design (Calder), 174
Engineering and Shipbuilding Notes, 515
Maritime and Naval Purposes, Screw Propulsion for, (Quick), 563
Material, Economic Handling of, Speeds of Cranes and, (Head), 366
Materials of Construction, Hard and Mild Ingot Irons as, 67
Matter, Modern Views of, Lodge *cited*, 240
Mawson, G. O., The Use of Sewage for Irrigation after Treatment in Septic Tanks in Tropical Countries, 481
Maximum Bending Moment, Curves of, for Spans of Bridges, (Bell), 68
Force in Retaining Wall Calculations, Mistaken Ideas with reference to the Resultant Force and, J. S. D. Moffet, 197
Mean Candle-power, (Russell), 570
Measurement of Polyphase Power, (Clinker), 468
Measuring the Moment of Inertia of the Armature of a Dynamo, Method of, (Fabry), 279
Mechanical Drawing in the Modern Drafting Room, (Follows), 574
Equivalent of Heat, The, (Hering), 67
Melting Equipment of the Atlas Engine Works, Indiana, U.S.A., 170
Ratio in Brass Foundries, (Buchanan), 457
Merchant Vessels Classed at Lloyd's, Rivet Spacing in, C. C., 322
Meridian Electric Arc Lamp, 543
Metal(s) and Mineral(s) *see* Alloys, Brass, Iron, Manganese, Mica, Nickel, Ores, Platinum, Steel, Sulphur, Tellurium, Tungsten and Vanadium
Blast-Furnace, Production of Open-hearth Steel from, (Talbot), 166
The Corrosion of, in Sea-Water, (Diegel), 376
Filings, Diffusion and Compression of, (Hof), 452
Plating by Contact, (Darlay), 467
Testing Laboratory of the National Conservatoire of Arts and Crafts, Paris, (Breuil), 458
Metallic Packings, (Longstreth), 573
Metallography, The, of Iron and Steel, (Howe), 456
Meters, *see* Electricity Meters
Method of Construction, Effect of Design on, (Newman), 68
of Examining Interior of Castings, H. B., 90
of Measuring the Moment of Inertia of the Armature of a Dynamo, (Fabry), 279
Mica, for Electrical Purposes, (Kilburn Scott), 66
Microphones, Production of Wave Currents by, (von Lieben & Reisz), 184
Microstructure of Cast-Iron, (Longmuir), 264
Midland Railway, Johnson's "Smith" 3-Cylinder-System Locomotives on, 125

Mild Steel(a) as Employed in the Construction of Electric Machines, (Charpy), 569
—— Tensile Tests of, (Unwin), 555
Mill Engine , Modern, the Valve-Gears of, C. Hurst, 289
Milling, Keyway, Chuck for, S. F., 91
Milwaukee, U.S.A., Railway and Lighting Storage Battery at, 369
Mineral Oil in Road Improvement, U.S.A., (Abbott), 465
Mines, Electricity in, (Futers), 468
Mining, *see* Coal Cutting
Mistaken Ideas with Reference to the Resultant Force and Maximum Pressure in Retaining Wall Calculations, J. S. D. Moffet, 197
Mixing-Machines, Concrete, Efficiency of, (Coleman), 550
Modern Crane Construction, G. W. Rushworth, 400
Drafting Room, the, Mechanical Drawing in, (Follows), 574
Equipment of Docks, Hydraulic and Electric Appliances, (Pitt), 261
Heating, Lighting and Power Gas, (Thomae), 371
Locomotives, Proportions of, (Fry), 571
Mill Engines, The Valve-Gears of, C. Hurst, 289
Pattern Shop, Organisation, Maintenance and Management of a, (Gobeille), 375
—— Practice, (Neil), 372
Radial Turbines, Comparison between Axial and, (Pfarr), 461
Views of Matter, Lodge *cited* on, 240
Modernising an Old Engine, J. C., 381
Modification of Existing System of Electrical Units, (Dompieri), 66
Moffett, J. S. D., Mistaken Ideas with Reference to the Resultant Force and Maximum Pressure in Retaining Wall Calculations, 197
Moisture in Conduits, (Murdoch), 552
Molecular State of Iron and Steel, the, Novel Method for ascertaining, (Sandarán), 455
Monophase Traction, (Finzi), 571
Motor(s), *see* Continuous-Current Electric, *and* Polyphase
A New Single-Phase (the Schüler-Ferranti), 566
Controllers, *see* Organ *do.*
Explosion, Peculiarity of, (Mathot), 361
Lawn Mower, Petrol-feed, (Ransomes, Sims, Jefferies'), 159
Petrol, for Locomotion, (Sauvage), 365
Motor-Car Racing, 49
Motor-Starting Switches, (Bate), 179
Motor-Vans for Municipal Purposes, (Higgens), 271
Mould Work, Practical, in Shipyards, (McLane), 562
Moulding, The "Cire perdu" Process of, R., T. N., 95
Mower, Petrol Motor for Lawn, (Ransomes, Sims, Jefferies'), 159
Multipliers for Electrostatic Alternating-Current Voltmeters, Capacities as, (Marchant & Worrall), 567
Multitubular Boilers, Scotch or Cylindrical, (Nicholl), 462
Munich Refrigerating Trial Station, Scientific Results of the, (Linde), 281
Municipal Purposes, Motor-Vans for, (Higgens), 271

Natal (*see* Durban), (Government) Railway, heavy 8-coupled tank locomotives building for, 127
National Conservatoire of Arts and Crafts, Paris, Metal Testing Laboratory of, (Breuil), 458
Naval Construction. Ingot-Iron in, (Benjamin), 170
Engines, The Bearings of, 563
and Maritime Purposes, Screw Propulsion for, (Quick), 563
New Applications of Alumino-thermite with Iron and Steel (Goldschmidt), 358
Books, (Reviews), 83, 242
Coaching Stock, G.C. Railway, 511
Cross-Channel Turbine Steamer "Queen," 58
Cupola Slag Conveyor, U.S.A., (West), 264
Form of Extensometer, U.S.A., (Summers), 259
German Electrical Oil-Testing Apparatus, (Perkins), 548
Great Central Route to London, Neasden-Northolt, 316
Integrating Planimeter, A, . . . 115
Machinery at the Royal Agricultural Show, 158
Machinery and Appliances, (*see also* Engineering Progress), 542
Process for determining the Dielectric Strength of Highly Insulated Substances, (Waller), 569
Researches on Nickel Steels, (Guillet), 262
Single-phase Motor, (the Schüler-Ferranti), 566
Suction Dredger, A, (Fruhling's). 153
Theory of Heat-power Plants (Smith), 268, 362
New Type of Polyphase Generator, A, Induction Machines and, Heyland's, (Elorall), 275
Works of the Lackawana Steel Co., U.S.A., 168
New York Water Department, Biological and Chemical Laboratories of, (Whipple) 80
Nickel, Alloys of Iron, Manganese, and, (Hadfield), 166
Recovery of, from Scrap Anodes, (Beckwith), 264
Steels, New Researches on, (Guillet), 262
for purposes of Construction, (Watson), 357
Nitrogen Compounds, An Electrical Method for Preparing, from Atmospheric Air, (Rasch), 178
and Potassium Cyanide Reactions with Blast Furnace Processes, (Braune), 68
Non-conducting Coverings for Steam Piping, Hudson-Beare Experiments on the Efficiency of, (Bolam & Grieve), 364
North British Locomotive Co., Glasgow, work by, completed and in hand, 127
— — — Successes of, 226-7
North-East Coast, Engineering and Shipbuilding Industry on, Position of, 515
North-Eastern Railway, Atlantic-type Locomotives on, 126
Notable British Triumph, A, Success of the N. B. Loco. Co., 226-7
Notes on High-speed Tool-Steels, (Sup'ee), 466
on Locomotive and Railway Engineering, C. S. Lake, 123, 222, 316, 419, 507
Some, on Steamship Economy, H. B. Donaldson, 385
Some, on Train Resistance. (Dendy-Marshall), 572
Novel Method for ascertaining the Molecular State of Iron and Steel, (Sandarán), 455
—— of Bridge Erection, 549
Type of "Contractors'" Locomotive, the "John Best," 421
Number of Revolutions, Influence of, on Design of Direct-Current Machines, (Hobart), 570.

Oil, Commutator Brushes running in, (Osnos), 567
Engines at the Royal Agricultural Show, (various makers), 158-9
Engine or Tractor, Self-propelled, (Petter & Sons), 158
Filters for Water of Condensation, A. B., 378
Fuel for Engines, (Rowland), 559
Fuel for Steam Ships, Körting System of Burning, 516
Mineral, in Road Improvement, U.S.A., (Abbott), 465
Ring, H. T. M , 287
Treatment for Leaks in Concrete, U.S.A., 552
Testing Apparatus, New German Electrical, (Perkins), 548
Old Engine, Modernising an, J. C., 381
Hydraulic Press, Enlarging an, J. H., 186
Open-Hearth Process, Experiments with 4-ton New Form Siemens Furnace, (Cubillo), 70
Steel, Production of, from Blast-Furnace Metal, (Talbot), 166
Orders, Foundry Shop, (McDowell), 78
Ore(s), (*see* Magnetite), Iron, of Arctic Lapland, (Osborn), 554
Magnetic Separation of, Recent Advances in, (Fabre)472
Organ Motor Controllers on 500-volt Circuits, Automatic Switch for, R. C. H., 282
Organisation, (*see* Labour *do.*), Maintenance and Management of a Modern Pattern Shop, (Gobeille), 375
Oscillograph, The Blondel, (Hale), 66
Output of Electric Plant, R., A. K., 96
Overheating of Steel, Burning and, (Stansfield), 356
Oxides of Iron, *see* Iron
Oxygen in Ingot-Iron and Steel, Determining the Percentage of, (Lurmann, junr.), 171
Ozone, Sterilisation of Drinking Water by, (Proskauer & Erlwein), 375

Packings, Metallic, (Longstreth), 573
Paints use for the Protection of Iron, Tests applied to, (Gill & Johnson), 161
Paper, *see* Squared *do.*
Passive State of Iron, (Burgess), 555
Patent "Ring" Pulley, The, 544
Pattern-Maker's Lathe, Chuck for, T. H. F., 91
Pattern-Shop, Modern, The Organisation, Maintenance and Management of a, (Gobeille), 375
Practice, Modern, (Neil), 372
Patterns, Storing of, (Worcester), 79
Pearse, J. W., The Viaur Railway Bridge, France, 200
Peculiarity of Explosion Motors, (Mathot), 361
Performance of an Internal Combustion Engine, (Halladay & Hodge), 360

Permanent Way(s) and Locomotives for High Speeds, Design of, (Inglis), 175
—— in the United Kingdom, Report of Mr. Young's Return Relating to, (King), 365
Petrol Motor(s), Lawn Mower, (Ransomes, Sims & Jefferies), 159
for Locomotion, (Sauvage), 365
Physical Properties of Malleable Cast-Iron as Influenced by Process of Manufacture, (Moldenke), 265
Physics, The, of the Steam Boiler, Reviews of Rowans *Practical Physics of the Modern* Steam Boiler, and of Bertin's *Chaudières Marines*, 408
Piece-work at Findlay's Motherwell Bridge Building Works, 139
System, Remodelled, (Van Yorx), 373
"Piloting" System, The, on the London and North-Western Railway and others, 425
Pino's Hydroscope, (Iberti), 182
Pipe(s), *see* Blow-pipes *and* Elbow-pipes
Clips, F. G H., 285
Fitting, (Ripley), 77
Turning, Large Centres for, T. H. F., 187
Piping, *see* Steam Piping
Piston-Valves in Compound Locomotives, (Pelletier), 572
Piston *versus* Slide-Valves, American Experiments with, 269
Planer Slides, Lubricating, C. E. S., 479
Planimeter, A New Integrating . . . 115
Plant(s), *see* Electric *and* Electric Generating *do.*, Gas *and* Heating Plants
Heat-Power, A New Theory of, (Smith), 268
Plates, *see* Gusset Plates
Plating, *see* Metal *do.*
Platinum, Elimination of, from Incandescent Lamps, (Bainville), 470
Plunger Pump, Hydraulic Experiments on, (Goodman), 81
Points and Crossing or Junction Diagram (Atkinson), 464
Polycyclic Power-Transmission System, The Arnold-Bragstad-Lacour, Germany, (Bragstad), 179
Polyphase Generator, New Type of Induction Machines and a, Heyland's, (Eborall), 275
Motors, Speed Regulation of (Sichter), 568
Power, Measurement of, (Clinker), 468
Porcelain for Electric work, (Bainville), 352
Portland Cement and Blast-Furnace Slag, (Passow), 354
in the Foundations of the elevated part of the Boston Elevated Railway, 453
Iron (von Schwartz), 453
Standard Specification for, (Canadian recommendation re), 451
Porous Brass Castings, (Vickers), 453
Position of the Steam Locomotive in 1903, 123
Positive Governor Drives for Corliss Engines, (Eldredge), 268
Possible Recovery of Blast-Furnace By-products, H. Allen, 1
Potassium Cyanide and Nitrogen Re-actions with Blast-Furnace Processes, (Braune), 68
Power, *see* Electrical *and* Polyphase
Economy of the Gas Engine as influenced by the Fuel, (Flint), 559
Fuel and, (Lunde), 281
Gas, Modern Heating, Lighting and, (Thomas), 371
Greatest Available Service of, in the World, (Victoria Falls, Zambesi river), 433
Plants, Heat, New Theory of, 268
Power-Transmission, The Arnold-Bragstad-Lacour Polycyclic System of, Germany, (Bragstad), 179
Practical Mould Work in Shipyards, (McLane), 562
Value of Presumptive Tests for *Bacillus Coli* in Water, (Whipple), 375
Practice, Modern Pattern Shop, (Neil), 372
Premium System of Remunerating Labour, (Schiller), 374
Preparation for Factory Management, (Diemer), 374
Preservation of Wood, Protection and, (Ferrell), 162
Presidential Address, of Mr. A. Carnegie, to the Iron and Steel Institute, 336
of Mr. R. Kaye-Gray to the Institution of Electrical Engineers, 525
Press, an Old, Enlarging, J. H., 186
The, Railway "Records" and, 321
Pressure Gauges, Recording, in Waterworks Management, (Doane), 80
Pressures Occurring with Explosions of Hydrogen and Carbon Oxide in Closed Vessels, (Langen), 70
Standard Direct-Current, 528
Presumptive Tests for *Bacillus Coli* in Water, Practical Value of, (Whipple), 375
Prevention of Boiler Explosions, (Gifford), 172
of Electrically-deposited Dust, (Munro), 277
of Trouble on Electric Mains, J. H. C. Brooking, 301
Primary Batteries, Improvements in, 542
Principal Iron-making Centres of the U.S.A., as Competitors, 554
Private Owners' Railway Wagons, 508
Problem(s), (*see* Unsolved Problems), A, connected with the Screw Propeller, (Durand), 565
Process, New, for determining the Dielectric Strength of Highly Insulating Substances, (Waller), 569
Products, *see* Inorganic Products
Production of High Temperatures by means of Thermite (Caldwell), 556
of Open-hearth Steel from Blast-Furnace Metal, (Talbot), 166
of Steam Metal Alloys, Conditions Governing, P. Longmuir, 412, 501
of Superheated Steam, Investigations in the, (Berner), 558
of Wave Currents by Microphones, (von Lieben-Reitz), 184
Project for a Capitalised Labour Organisation, (Redfield), 471
Properties of Hydrate of Lime, Manufacture and, (Brigham), 452
Propeller Construction, Q., M.G.C., 95
A New, the Walters, 517
Screw, A Problem connected with the, (Durand), 565
Properties of Alloys, the Influence of Varying Casting Temperatures on the, (Longmuir), 359
Proportions of Modern Locomotives, (Fry), 571
Proposed Technical College for London, The Commissioners of the 1851 Exhibition and, 150
Propulsion, *see* Screw Propulsion
Protection of Iron, Paints used for the, Tests applied to, (Gill & Johnson), 161
of Foreshore, and Travel of Beaches, (Douglass), 259
and Preservation of Wood, (Ferrell), 162
Protective Coatings for Iron and Steel, (Voorhees), 352
Pulley, The Patent "Ring," 544
Pumps, *see* Centrifugal *and* Plunger-Pumps
Pumps, . . . Rod, Repair to, H. P., 189
Punched Rivet-holes, Drilled *v.*, in the Hulls of Ships (Yarrow), 563

"Queen," the new Cross-Channel Turbine Steamer, 58

Racing with Motor-cars, 49
Radial Turbines, Modern, Comparison between Axial and (Pfarr), 461
Radio-Activity, (Soddy), 548
Rails, *see* Steel Rails
Railway(s), *see* Boston Elevated, U.S.A., Caledonian, Electric High-Speed, Great Central Railway, Great Northern Railway, Great Western Railway, London, Brighton & South Coast Railway, London & South Western Railway, London, Tilbury, and Southend Railway, Natal Government Railway, North Eastern Railway, *etc.*
Bridge, The Viaur, France, J. W. Pearse, 200
Congestion of Freight on, (Herron), 466
Construction, Iron in, (Haarmann), 170
Engineering, *see* Notes on Locomotive and Railway Engineering
High Speeds on, 464
Improvements, London, Brighton & South Coast, erection of Bridge, 73
and Lighting Storage Battery at Milwaukee, U.S.A., 369
Practice, Assimilation of, in respect of Loads on Bridges up to 200ft. span, (Ross), 164
"Records" and the Press, 321
Shops, Heating and Ventilating, (Gifford, and Child), 182
Signalling, Automatic, British and American, (Cudworth), 176
Steam, The Electrification of (Parry), 571
Viaducts, some Recent, 339
Wagons of Private Owners, 508
Raising Water by Compressed Air, (Griffith), 376, (Maxwell), 576
Ram, Hydraulic, Q., E. H. D., 95
Rapid Blue-Print Frame, (Randol), 472
Rapid-Cutting Steel Tools, Experiments with, 530
Ratio of Melting in Brass Foundries, (Buchanan), 457
Reactions, (*see* Chemical *do.*) Potassium Cyanide and Nitrogen, with Blast Furnace Processes, 68
of Temperature in the Blast Furnace, (Allen), 266

Reamers, Grinding, "Gauger," 475
and Reaming Heads Machine, Construction and Working of, (Bruce-Ball), 78
Recent Advances in Magnetic Separation of Ores, (Fabre), 472
Improvements in Canal Engineering, (Fitz-Gibbon), 176
Railway Viaducts, Some, 339
Recording Pressure Gauges in Waterworks Management, (Doane), 80
"Records,' Railway, and the Press, 321
Recovery of Nickel from Scrap Anodes, (Beckwith), 264
Possible, of Blast Furnace By-Products, H. Allen, 1
Refacing Cylinder of Steam Engine, C. A., 283
Refrigerating Trial Station, Munich, Scientific Results of the, (Linde), 281
Refuge Destructors, (Massey), 281
Regulation, *see* Speed Regulation
Reinforced Concrete Floor, A., U.S.A., (Scofield), 352
Relation of Speed to Curvature, 364
Reliable Seal for Electricity Meters, R., F. S., 96
Remodelled Piece-work System, (Van Yorx), 373
Remunerating Labour, Premium System of, (Schiller), 374
Repair(s) to Gas Engine, H. T. M., 377
to Pump Rod, H. P., 189
to Steam-Engine Cylinder, E. Fleming, 476
Report on Mr. Young's Return Relating to Permanent Ways in the United Kingdom, (King), 365
Researches on Manganese Steels, (Guillet), 359
New, on Nickel Steels, (Guillet), 262
Reservoir Embankments and Dams, Macadam as a Core for, 260
Resistance of a Screw Steamer in Free Route, Experiments on, (Enno Van Gelder), 561
of Trains, Some Notes on, (Dendy-Marshall), 572
Restoration of Dangerously Crystalline Steel by Heat Treatment, The, J. E. Stead and A. W. Richards, (*see also* p. 358), 306
Resultant Force and the Maximum Pressure in Retaining Wall Calculations, Mistaken Ideas with reference to, J. S. D. Moffet, 197
Retaining Wall Calculations, Mistaken Ideas with reference to the Resultant Force and Maximum Pressure in, J. S. D. Moffet, 197
Reviews, *see* New Books, 327, 384, 408
Revolutions, Number of, Influence of, on Design of Direct-Current Machine, (Hobart), 570
Richards, A. W. (joint-author), *see* Stead, J. E.
Rim Joints, Fly-wheel. (Burlingham), 273
Ring, (*see* Oil Ring) Pulley, The Patent, 544
Rivet-cutting Appliance, "Aspirant,' 94
Rivet-holes, Drilled *v.* Punched, in the Hulls of Ships, (Yarrow), 563
Rivet-spacing in Merchant Vessels Classed at Lloyd's, C. C., 322
Rivets in Structural Steelwork, (Tilden), 454
Riveting of Lapped Butts, (Hogg), 273
Road Improvement, U.S.A., Mineral Oil in, (Abbott), 465
Roads of Steel, (Stone), 72
Rock Drills, Electric, (Munby), 467
Rod, *see* Pump Rod
Rôle of Earth in Wireless Telegraphy, (Koepsel), 181
Rotary Cutters, Dredging with, (Apjohn), 165
Route, (*see* Free Route), New Great Central, to London, Neasden-Northolt, 316
Royal Agricultural Show, New Machinery at the, 158
Rumour, An Unfounded, 425
Running Fits, . . . (Moore), 574
Temporary, of a 4-ft. Boring Lathe, R. V. C. Brook, 379
Rushworth, G. W., Modern Crane Construction, 400

SAND-BLAST Cleaning, The, of Structural Steel, G. W. Lilly, 97
Sand, and Water, Variations in, Influence of, on Cement, *table*, (Larned), 451
Saturated Water Vapour, Escape of, (Schule), 175
Scientific Results of the Munich Refrigerating Trial Station, (Linde), 281
Scotch Bridge Building,
(I.) Messrs. A. Findlay & Co.'s Works, Motherwell, G. Halliday, 131
or Cylindrical Multitubular Boilers, (Nicholl), 462
Scott-Moncrieff System of Sewage Treatment, 280
Scrap Anodes, Recovery of Nickel from, (Beckwith), 264
Screw(s), The Accurate Cutting and Testing of, (Orr), 272
Cutters' Guide, J. G., 478
Press, Small Hydraulic, G. E., 478
Screw(s) Propeller, the, A Problem Connected with, (Durand), 565
Propulsion for Naval and Maritime Purposes, (Quick), 563
Ships, Cavitation with, (Normand), 564
Steamer, Resistance of, in Free Route, Experiments on, (Enno Van Gelder). 561
Seal, Reliable, for Electricity Meters, R., F. S., 96
Seamless Steam Boilers, Ehrhardt Process, (Lentz), 71
Sea-wall, Failure of, and its Reconstruction, U.S.A., (Fernald), 551
Sea-Water, The Corrosion of Metals in, (Diegel), 376
Seeing Round a Corner, H. B., 90
Segments, Discs and, Manufacture of Armature, (Woodforth), 75
Self-propelled Oil Engine or Tractor, (Petter & Sons), 158
Self-Supporting Steel Stacks, (Newton), 165
Separating the Losses by Friction in Electrical Machines, (Finzi), 279
Separation of Ores, Magnetic, Recent Advances in, (Fabre), 472
Septic Tank(s), The, at La Grange, Ill., (Ewing), 80
The Use of Sewage for Irrigation in Tropical Countries, after Treatment in, E. O. Mawson, 481
Severn, river, Bacteriological Investigation of, in the Shrewsbury District, (Boyce & others), 183
Sewage, Composition of, in Relation to Problems of Disposal, (Fuller), 471
Experimental Treatment of, containing Trade Waste at Huddersfield, (Campbell), 375
Treatment, The Scott-Moncrieff System of, 280
The Use of, for Irrigation after Treatment in Septic Tanks in Tropical Countries, E. O. Mawson, 481
Shaft Couplings, Flanged, Dimensions for, (Bunnell), 366
Shafting, To Fix, "Millwright," 91
Shallow Subways, Deep-Level and, (Cottrell), 177
Shipbuilding Works, Applications of Electricity in Engineering and, (Williamson), 180
Ships, Hulls of, Drilled *v.* Punched Rivet-holes in, (Yarrow), 563
Screw, Cavitation with, (Normand), 564
Shipyards, Practical Mould Work in, (McLane), 562
Shop(s) (*see* Pattern Shop) and Manufactory Administration, Gauges and Standards as affecting, (Marshall), 373
(Railway, etc.), Heating and Ventilating of, (Gifford, and Child), 182
Shrewsbury District, Bacteriological Investigation of the River Severn in, (Boyce and others), 183
Shrinking Fits, . . . (Moore), 574
Siemens' Furnace, results obtained by experiments with, (Cubillo), 70
Signalling, Automatic, British and American, (Cudworth), 176
Silicon, Alleged Cementation of Iron by, (Stead), 70
the Influence of, on Iron, (Baker), 355
Silver Wires Immersed in Water, External Conductivity of, (Rogoosky), 367
Simultaneous Telegraphing and Telephoning, (Banti), 74
Single-phase Motor, A New (the Schüler-Ferranti), 566
Skew Arches, The Stresses on, (Kernot), 162, (Paige), 354
The Theory of, (Miller), 353
Slag, Blast-Furnace, Portland Cement and, (Passow), 354
Conveyor, A New Cupola, U.S.A., (West), 264
Slides, *see* Planer *do.*
Slide-rest, Design for a Circle or Arc, (Card), 367
Slide-Valves, Piston *versus*, American Experiments with, 269
Sliding Stay, A, J. H., 287
Slope Walls, Design of, 164
Small Converter, Process for the Manufacture of Steel Castings, (Simonson), 264
Electric Motor, the Development and Use of, (Kimball), 182
Factories, Economy of Electric Light Equipment in, 73
Hydraulic Screw Press, G. E., 478
Industries, Use of Electro-Meters in, (Lowit), 368
Smart Work on the Great Central Railway, 421
"Smith" System for Locomotives, An Unfounded Rumour concerning, 423
Smoke Abatement, (Beilby), 182
Some Notes on Steamship Economy, H. B. Donaldson, 385
on Train Resistance, (Dendy-Marshall), 572
Recent Forms of Gas Producer, (Sexton), 267
Railway Viaducts, 339
Tests of Boiler and Furnace Efficiencies, (Bement), 462
Unsolved Problems in Engineering, ("James Forrest" Lecture by W. H. Maw), 53
Sorbitic Steel Rails, (Stead and Richards), 356
Spacing, *see* Rivet Spacing

Spanners, How to make, Works Manager, 379
Speed(s), (*see* High Speeds), Bursting of Emery Wheels, (Benjamin), 274
of Cranes and Economic Handling of Material, (Head), 366
to Curvature, Relation of, 364
Regulation of Continuous-Current Motors, (Rogers), 367
—— of Polyphase Motors, (Slichter), 568
Spier Falls Dam, Hudson River, U.S.A., (Howe), 259
Squared Paper, Use for, J. E. L., 476
Stacks, Self-supporting Steel, (Newton), 165
Standard Direct-Current Pressures and Standard Frequencies, 528
Frequencies, 528
Specification for Portland Cement, (Canadian recommendation re), 451
Test-Bars for Cast-Iron (Outerbridge), 455
Standards, Gauges and, as affecting Shop and Manufactory Administration, (Marshall), 373
Starting Arrangement, A, J. H., 185
Switch, The, Evolution of, (A. H. M.), 468
Stay, A Sliding, J. W., 287
Stead, J. E., and A. Richards, The Restoration of Dangerously Crystalline Steel by Heat Treatment, (*see also* p. 358), 306
Steam, *see* Exhaust *and* Superheated *do.*
Boiler(s), the, The Physics of, *review*, 408
Seamless, Ehrhardt Process, (Lentz), 71
Cylinder Castings, Composition and Strength of, (Wust & Goerens), 556
Engine Cylinders, Water in, Draining Steam Pipes, R., J. GREEN, 383
Engine(s) made in the U.S.A., 269
Refacing Cylinder of, C. A., 283
and Superheated Steam, (Vanderstegen), 267
Locomotive, The, Position of, in 1903, 123
Metal Alloys, Conditions Governing the Production of, P. Longmuir, 412, 501
Piping, Hudson-Beare Experiments on the Efficiency of Non-conducting Coverings for, (Bolam & Grieve), 364
Railways, The Electrification of, (Parry), 571
Superheated, Steam Engines and, (Vanderstegen), 267
—— *table*, 431
Transit of, in Ships, C. A., 89
Steam-driven and Gas-driven Blowing Engines, (Westgarth), 268
Steam Ships, the Körting System of Burning Oil Fuel for, 516
Turbine(s), (Rateau), 360
—— Electric Generating Plants, (Wilkinson), 566
—— from an Operating Standpoint, in U.S.A., (Waldron), 361
—— -driven Centrifugal Pumps for High Lifts, (Darley), 560
Steamer(s), (*see* Turbine Steamer), Screw, Resistance of, in Free Route, Experiments on, (Enno Van Gelder), 561
Steamship Economy, Some Notes on, H. B. Donaldson, 385
Steel, *see* Alloys of Iron and Tungsten Case-hardening, Crystalline, Iron and Steel, Nickel Steel, Open Hearth Process, *etc.*
Arched Bridge, L. B. & S.C.R., 73
British The London County Council v., 148
Burning and Overheating of, (Stansfield), 356
Castings, The Small Converter Process for the Manufacture of, (Simonson), 264
Determining the Percentage of Manganese in, (Mallette), 171
— — of Oxygen in Ingot-Iron and, (Lurmann, junr.), 171
Diffusion of Sulphide through, Experiments on, (Campbell), 357
Eye-bars, 18-inch, The Making of, (Webster), 572
Heat Treatment of, under Steelworks Practice, (Campion), 168
High Speed Tool, Notes on, (Suplee), 466
Influence of Sulphur and Manganese on, (Arnold & Waterhouse), 70
and Iron, Allotropic Changes of, (Boudouard), 69
Manganese, Researches on, (Guillet) 359
Mild, Dangerous Crystallisation of, and of Wrought Iron, (Arnold), 169
—— as Employed in the Construction of Electric Machines, (Charpy), 569
—— Tensile Tests of, (Unwin), 555
Nickel, New Researches on, (Guillet), 262
Open-Hearth, Production of, from Blast-Furnace Metal, (Talbot), 166
Steel Rails, Sorbitic, (Stead & Richards), 356
Roads, (Stone), 72
Stacks, Self-Supporting, (Newton), 165
Structural, The Sand-Blast Cleaning of, G. W. Lilly, 97
Testing the Brittleness of, (Izod), 552
Tools, Rapid-Cutting, Experiments with, 530
Tube, Taking out Bulge from, G. C., 475
Steel-Making, Alloys used for, (Ohly), 554
Steel-Work, Structural, Rivets in, (Tilden), 454
Steelworks, New, of the Lackawana Steel Co., U.S.A., 168
Practice, Heat Treatment of Steel under, (Campion), 168
Sterilisation of Drinking Water by Ozone, (Proskauer and Erlwein), 375
Stones, *see* Granite *do.*
Storage Battery, The Edison, 529
— Railway and Lighting, at Milwaukee, U.S.A., 369
— in Transmission Plants, (Knowles), 75
Stores Ledger, The (Johnson), 280
Storing Patterns, (Worcester), 79
Stoves, *see* Hot-Blast Stoves
Streams of Gases and Vapours through Tubes with Variable Section, (Lorenz), 559
Street Lighting, Arc Lamps for, U.S.A., (Halberg), 370
Strength, Composition and, of Steam Cylinder Castings, (Wust & Goerens) 556
Dielectric, of Highly Insulating Substances, a New Process for Determining, (Walter), 569
Stresses, The, on Skew Arches, (Kernot), 162; (Paige), 354
Stretching Block, A., J. H., 477
Structural Steel, The Sand-Blast Cleaning of, G. W. Lilly, 97
—— Work, Rivets in, (Tilden), 454
Studs in Large Commutator Flanges, W. W., 477
Study of Alloys, An Introduction to the, (Howe), 358
— — Suitable for Bearing Purposes, (Clamer), 263
Submarine vision and photography by Pino's Hydroscope, (Iberti), 182
Substances, *see* Highly Insulating *do.*
Subways, Deep-Level, and Shallow, (Cottrell), 177
Suction Dredger, A New, (Fruhling's), 153
Gas Plant Tests, (Brauer), 558
Suggested Hydraulic Unit, A, (Montagu), 549
Sulphur-Dioxide Engine, The, (Thurston), 173
in Lighting Gas, Relation of, to Air Vibration, (Haldane), 470
and Manganese, Influence of, on Steel, (Arnold & Waterhouse) 70
Sulphide, The Diffusion of, through Steel Experiments on, (Campbell), 357
Superheated Steam, (Witz), 175; tables, 431
Investigations in the Production of, (Berner), 558
and Locomotives, (Berner), 172; 320
Steam Engines and, (Vanderstegen), 267
Superheaters for Locomotives, (Low), 272
Superheating by Wire-Drawing, J. Foster, 193
Supporting and Conducting Inside Conductors, (Falconar), 277
Surface Table, a, Levelling and Testing, "Thamis," 88
Swage Block, I. Posts, 285
Swedish or Arctic Lapland, Iron Ore of, (Osborn), 554
Switch(es) (*see* Starting *do.*), Automatic, for Organ Motor Controllers on 500-volt circuits, R. C. H., 282
for Starting Motors, (Bate), 179
System, (*see* Premium System), Remodelled Piece-work, (Van Vorx), 373
of Units, Modification of existing, (Dompieri), 66

TABLE, A Surface, Levelling and Testing, "Thamis," 88
Tackle, *see* Hoisting Tackle
Taking out Bulge from Steel Tube, G. C., 475
Tangential Electric Traction, 466
Tank(s), (*see* Septic Tank), Engines, Scottish Built, for the London, Tilbury and Southend Railway, 127
Taper Boring, F. B. 478
Technical College for London, Proposed, The Commissioners of the 1851 Exhibition and, 150
Telegraphing and Telephoning, Simultaneous, (Banti), 74
Telegraphone, The, (Poulsen s), 278
Telegraphy, *see* Wireless Telegraphy
Telephoning and Telegraphing, Simultaneous, (Banti), 74
Tellurium, Influence of, on Brass, (Dubois), 264
Temperature(s), (*see* Casting Temperatures), Extremely High, Chemical Reactions at, (Zenghelis), 472
High, Production of, by means of Thermite, (Caldwell), 556

Temperature of Hot Blast for Blast Furnaces, Equalisation of, (Harrison), 169
Reactions in the Blast Furnace, (Allen), 266
Tempering a Circular Saw, R., F. B., 192
Tensile Tests of Mild Steel, (Unwin), 555
Temporary Dams, (Renyon), 454
Running of a 4-ft. oring Lathe, R. V. C. Brook, 379
Testing, (*see* Design and Testing), and Accurate Cutting of Screws, (Orr), 272
of Bitumen, The, (Dow), 352
Brittleness of Steel, (Izod), 552
Gas Engines, (Oliver), 362
Heating Plants, (Dye), 371
Levelling and, a Surface Table, "Thamis," 88
Apparatus, for Oil, New German Electrical, (Perkins), 548
Test(s), (*see* Presumptive Tests), applied to Paints used for the Protection of Iron, (Gill & Johnson), 161
of a Direct-connected 8-ft. Fan and Engine, (Farwell), 312
of a Gas Engine, U.S.A., (Robertson), 256
of the Efficiency of Hoisting Tackle, (Mitchell), 547
Some, of Boiler and Furnace Efficiencies, (Bement), 462
of Suction Gas Plant, (Brauer), 558
Tensile, of Mild Steel, (Unwin), 555
-Bars, Standard, for Cast-iron, (Outerbridge), 455
Text-Book, a New, Entropy, *review*, W. C. H., 327
Thames, River. King Edward VII. Bridge over, at Kew, W. N. Twelvetrees, 61, 140
Theory of Electric Batteries, (Rosset), 270
A New, of Heat-Power Plants, (Smith), 268
of Skew Arches, The, (Miller), 353
Thermal Efficiency of Hot-Blast Stoves, The, (Thwaite), 70
Thermite, Production of High Temperatures by means of, (Caldwell), 556
Thermodynamics, *see* Heat-producing Plant
Thread, Cutting, on Elbow-pipe, H. W., 477
Tool Steel, *see* High-Speed *do.*
Tools, Rapid-cutting Steel, Experiments with, 530
Topics of the Month, 49, 148, 238, 331, 426, 525
Traction, Magnetic Increase of, 271
Monophase, (Finzi), 571
Tangential Electric, 466
Tractor, *see* Self-propelled Oil-engine
Trade, British Empire, 331
Waste at Huddersfield, Experimental Treatment of ewage containing, (Campbell), 375
Train Resistance, Some Notes on, (Dendy-Marshall), 572
Trammel-head, An Improved, A. C. K., 382
Transit of Steam, The, in Ships, C. A., 89
Transmission of Heat, Emission and, 470
Plants, The Storage Battery in, (Knowles), 75
Travel of Beaches, Protection of Foreshore and, (Douglass), 259
Treatment, (*see* Heat Treatment), Experimental, of Sewage Containing Trade Waste at Huddersfield, (Campbell), 375
in Septic Tanks, The Use of Sewage for Irrigation after, in Tropical Countries, E. O. Mawson, 481
Tropenas Converter, (Simonson), 264
Tropical Countries, The Use of Sewage for Irrigation in, after Treatment in Septic Tanks, E. O. Mawson, 481
Trouble Prevention on Electric Mains, J. H. C. Brooking, 301
Truck, A Lathe-Shop. F. H., 471
Truro Viaduct, Great Western Railway, 339
Tube Drawing, R., F. B., 191
Tube(s), Steel, Taking Out Bulge from, G. C., 475
with Variable Section, Streams of Gases and Vapours through, (Lorenz), 559
Tungsten Alloys of Iron and, (Hadfield), 458
Turbine(s), Axial, and Modern Radial, Comparison between, (Pfarr), 461
Steam, (Rateau), 360
from an Operating Standpoint, in U.S.A., (Waldron), 361
Steamer "Queen," The New Cross Channel, 58
Turning, (*see also* Boring), Pipes, Large Centres for, T. H. F., 187
Valve Balls, J. H. H., 186
Turret Lathe, a, Drilling a Hole with, T. B., 89
Twelvetrees, W. N., The Egyptian Water Problem and Sources of Further Supplies, 214
King Edward VII. Bridge over the River Thames at Kew, 61, 140
Types and Details of Bridge Construction, (Skinner), 166

Unfounded Rumour, An, *re* "Smith" System for Locomotives, and the London & North-Western Railway, 421
Unit(s), (Electrical), Modification of Existing System of, 66
A Suggested Hydraulic, (Montagu), 549
Universal Drafting Machine, Little's, *see* Drawing-Office Equipment
Unsolved Problems, Some, in Engineering, ("James Forrest" Lecture by W. H. Maw), 53
Use, Development and, of the Small Electric Motor, (Kimball), 182
of Electrolysis in the Industry of Inorganic Products, (Brandeis), 369
of Electro-Meters in Small Industries, (Lowit), 368
The, of Sewage for Irrigation after Treatment in Septic Tanks in Tropical Countries, E. O. Mawson, 481

Valve(s), (*see* Piston-Valves), Balls, Turning, J. H. H., 186
in High-speed Engines, J. H. Dales, 395
-Gear, An Ingenious (Reikie & McIntosh's), 510
—— of Modern Mill Engines, The, C. Hurst, 289
-Pattern, a, Fitting a Branch on, C.A., 187
-Setting on a Double-Eccentric Corliss Engine, (Bissell & Dow), 464
Value, Practical, of Presumptive Tests for *Bacillus Coli* in Water, (Whipple), 375
Vanadium and its Alloys, Electrolytic Production of, (Gin), 270
Vans, *see* Motor Vans
Vapour(s), (*see* Gases and Vapours), Saturated Water Escape of, (Schule), 175
Variations in Water and Sand, Influence of, on Cement, *table*, (Larned), 451
Varying Casting Temperatures, The Influence of, on the Properties of Alloys, (Longmuir), 359
Vauxhall Bridge, the L.C.C., and British Steel, 148
Ventilating, Heating and, of Shops, (Gifford, and Child), 182
Ventilation of Factories and Workshops, 370
Vessels, *see* Closed Vessels, *and* Merchant Vessels
Viaduct(s), (*see* Leven Viaduct), Railway, Some Recent, 339
Viaur Railway Bridge, The, France, J. W. Pearse, 200
Victoria Falls, Zambesi River, S. Africa, The Greatest Available Service of Power in the World, 433
Vitiation of Air, Relation of Sulphur in Lighting Gas to, (Haldane), 470
Voltmeters, Electrostatic Alternating-Current, Capacities as Multipliers for, (Marchant & Worrall), 567
Volumetric Estimation of Manganese in Iron and Steel, (Walters), 456

Wagons, *see* High-capacity *and* Railway Wagons
Wall(s), *see* Retaining Wall, Sea-wall, Slope Wall
Walters Propeller, 517
Waste, *see* Trade Waste
Water, *see* Hydraulic Power Pumps *and* Seawater
Bacillus Coli in Practical Value of Presumptive Tests for, (Whipple), 375
of Condensation, Oil Filters for, A. B., 378
Department, *see* New York Water Department
External Conductivity of Silver Wires Immersed in, (Rogovsky), 367
Power from Mountain Snow, *see* "Houille Blanche"
Problem, The Egyptian . . ., W. N. Twelvetrees, 214
Raising, by Compressed Air, (Griffith), 376; (Maxwell), 575
and Sand, Influence of Variations in, on Cement, *table*, (Larned), 451
in Steam Engine Cylinders, draining Steam Pipes, R., J. Green, 383
Vapour, Saturated, Escape of, (Schule), 175
Water-tube Boilers, (Mills), 557
Waterworks Management, Recording Pressure Gauges in, (Doane), 80
Wave Currents, Production of, by Microphones, (von Lieben & Reisz), 184
Way(s), (*see* Permanent Ways), of Modernising an Old Engine, J. C., 381
Webb's Compound Engines on the London and North Western Railway, 124-5
Westinghouse Drawing Office, The, 574
Weston Mill Viaduct, 340
Wheels, *see* Axles, Emery Wheel, Fly Wheel, Worm Wheels
Wind, Cause of the Leven Viaduct Accident, 260
Wind-power for Electric Central Stations, Denmark, (La Cour), 278
Wire, *see* Silver Wires

Wire-drawing, Superheating by, F. Foster, 193
Wireless Telegraphy, Rôle of Earth in, (Koepsel), 181
—, Some Problems of, (Pochin), 180
Wood Bowls, Boring, M. D., 190
Protection and Preservation of, (Ferrell), 162
Workship Practice, 88, 185, 282, 377, 474
Q. and A., 95, 191, 288, 383
Workshops, Factories, and, Ventilation of, 370
uses of Blow-pipes in, Q., S. F., 474
Worm-wheels, Cutting, on a Horizontal Boring Machine, J. D., 283
Wrought Iron, Dangerous Crystallisation of Mild Steel and, (Arnold), 169
YOUNG, Mr., Return of Relating to Permanent Ways in United Kingdom, Report on, (King), 365
ZAMBESI river, S. Africa, The Victoria Falls on, the Greatest Available Service of Power in the World, 433